

**WHAT IS CLAIMED IS:**

1. A method for detecting disposition of plurality of exposure shot areas of an object that is  
5 to be exposed, said method comprising:

a first detection step of detecting the alignment marks on the object;

an evaluation step of evaluating randomness of the alignment marks based on the detection result by  
10 said first detection step;

a determination step of determining a number smaller than the total number of alignment marks on the object based on the evaluation result by said evaluation step; and

15 a second detection step of detecting the disposition of the plurality of exposure shot areas by detecting alignment marks corresponding to the number determined by said determination step.

20 2. A method according to claim 1, wherein said evaluation step evaluates positional detection accuracy of the alignment marks based on the detection result said first detection step.

25 3. A method according to claim 1, wherein the alignment mark includes plural mark elements, and

wherein said evaluation step evaluates an interval between the mark elements detected by said first detection step.

5           4. A method according to claim 3, wherein said determination step determines a minimum natural number  $N_s$  that meets  $N_s \geq \alpha \cdot (M_r / A_r)^2 / N_m$ , where  $M_r$  is reproducibility of the interval between the mark elements,  $N_m$  is the number of mark elements included in  
10 each alignment mark,  $A_r$  is required accuracy, and  $\alpha$  ( $1 \leq \alpha \leq 3$ ) is a corrective coefficient.

5. A method according to claim 3, wherein said determination step determines a minimum natural number  
15  $N_s$  that meets  $N_s \geq \alpha \cdot f(N_m, M_r, A_r)$ , where  $M_r$  is reproducibility of the interval between the mark elements,  $N_m$  is the number of mark elements included in each alignment mark,  $A_r$  is required alignment accuracy,  $\alpha$  ( $1 \leq \alpha \leq 3$ ) is a corrective coefficient, and  $f$  is a  
20 predetermined function.

6. A method according to claim 1, wherein the alignment mark includes plural mark elements, and  
wherein said evaluation step includes the  
25 steps of:

calculating a difference between an average among measurement values of positions of all the mark

elements, and the measurement value of the position of the mark element; and

calculating reproducibility of the difference.

5           7.    An apparatus for detecting dispositions of a plurality of exposure shot areas of an object that is to be exposed, said apparatus comprising:

              a detector for detecting the alignment marks on the object;

10           a processor for evaluating randomness of the alignment marks based on the detection result by said detector;

              a controller for determining a number smaller than the total number of alignment marks on the object based on the evaluation result by said processor; and

15           a second detector for detecting the dispositions of the plurality of exposure shot areas by detecting alignment marks corresponding to the number determined by the controller.

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              8.    An apparatus according to claim 7, further comprising an input part for inputting required alignment accuracy.

25           9.    An exposure apparatus comprising the apparatus according to claim 8.

10. An overlay inspection method for inspecting an overlay state between first and second patterns for plural shots, a film being formed on the first pattern, and the second pattern being formed on the film, said  
5 overlay inspection method comprising:

a first detection step of detecting measurement marks corresponding to three or more shots (Ns1);

a determination step of determining the  
10 number (Ns) of necessary shots for satisfying required detection accuracy based on a detection result by said first detection step; and

a second detection step of detecting measurement marks corresponding to the number (Ns) of  
15 shots, from which the detected shots (Ns1) are subtracted.

11. An overlay inspection apparatus for inspecting an overlay state between first and second  
20 patterns for plural shots, a film being formed on the first pattern, and the second pattern being formed on the film, said overlay inspection apparatus comprising:

a detector for detecting a measurement mark corresponding to the shot; and

25 a controller for determining the number (Ns) of necessary shots for satisfying required detection

accuracy based on a detection result by said detector  
of the measurement marks.